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ABSTRACT

This report presents the findings of an analysis of the Academic Performance Index (API) scores based on SATs taken in 1999, 2000, and 2001. It focuses on charter schools in California that serve students from low socioeconomic-status (SES) families. The purpose of the study was to see how standardized test scores from charter schools serving low-SES students compared with statewide averages. The method employed in the study was a longitudinal statistical analysis of test-results data available from California schools. The unit of analysis consisted of individual schools. The principle findings are as follows: (1) California charter schools are doing a better job of improving the academic performance of at-risk students than noncharter schools are; (2) student achievement in low-income charter schools is, on average, improving at a faster rate than in similar noncharter schools; (3) charter schools are serving a greater concentration of low-income students; (4) smaller schools tend to outperform larger schools in terms of student achievement growth; (5) socioeconomic status continues to influence student performance on standardized tests; and (6) factors also influencing performance include percentage of teachers on emergency credentials, high mobility rates, and high percentage of English-language learners. (Contains 16 references.) (WFA)



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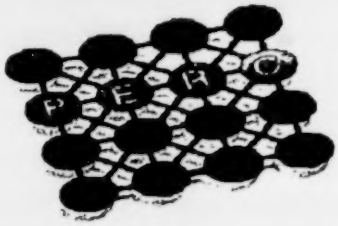
ED 469 276

# California Charter Schools Serving Low-SES Students: An Analysis of the Academic Performance Index

**March 11, 2002**




**By**

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This report presents the findings of an analysis of the Academic Performance Index scores (API) based on the Stanford Achievement Tests (SAT 9) taken in spring 1999, 2000, and 2001. It focuses on charter schools in the state of California who serve students from low-socioeconomic status (SES) families. The research was conducted by Simeon P. Slovacek and Antony J. Kunnan, faculty members in the Charter College of Education at California State University, Los Angeles. Both are evaluators with PERC - the Program Evaluation and Research Collaborative. Special thanks are owed to Michael Batie who merged databases and conversions for the analysis, and to Laura Pantoja and Hae-Jin Kim who assisted in the preparation of this report.

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# SUMMARY OF FINDINGS

An analysis was conducted on the Academic Performance Index (API) for charter and non-charter schools in California. API scores for the years 1999, 2000, and 2001 were analyzed along with various charter school characteristics. Since socioeconomic status (SES) has a strong correlation with student performance on standardized tests, comparisons were made focusing on schools serving free or reduced lunch eligible students (low-SES students). Raw comparisons of test scores (unadjusted for SES) tend to be misleading since charter schools often choose to work with the most challenging populations, and have done so with lower funding levels per student, as California has not provided facilities funds to charter schools. This study looked at the results of charter and non-charter schools and student achievement (as measured by API) when adjusted for SES. The findings were as follows:

1. California charter schools are doing a better job of improving the academic performance (as measured by API) of California's most at-risk students, those who are low-income, than non-charter California public schools.
2. Student achievement (as measured by API) in California's low-income charter schools is, on average, improving at a faster rate than in similar non-charter schools.
   a) When 2001 API scores were compared with 1999 API scores for California schools that reported serving 50% or more free or reduced lunch eligible students, the charter schools' (N=41) API means improved more (22.6%) than the non-charter schools' (N=3136) API means which improved 19.4%.
   b) The difference was more pronounced for the very high poverty schools that reported serving 75% or more free or reduced lunch eligible students. These charter schools' scores improved 28.1% (N=25) while non-charter schools' scores improved 23.8% (N=1549). It appears that charter schools are doing an effective job of improving the academic performance of low-income students.
3. Charter schools are serving a greater concentration of low-income students.
   a) In 2001, the percentage of charter schools reporting both three years of API scores and meals, who served students where 75% or more are low-SES students is estimated at 27.2% vs. 23.04% for non-charters schools in California.
4. Smaller schools tend to outperform larger schools in terms of student achievement growth. In other words, size matters.
   a) Charter schools lost on average 4.5 API points for every increase of 100 students in school enrollment size.
   b) Non-charter schools lost on average 5.8 API points for every increase of 100 students in school enrollment size.
5. Socioeconomic status continues to influence student performance on standardized tests.
   a) Each percentage point of the student body that was considered low-SES (free or reduced lunch) resulted in a 1.2 point decline in charter schools' API scores.
   b) Each percentage point of the student body that was considered low-SES (free or reduced lunch) resulted in a 2.6 point decline in non-charter schools' API scores.
6. Factors also influencing API performance included percentage of teachers on emergency credentials, high mobility rates, and high percentages of English language learners.
7. Charter schools are overcoming the well-documented challenges faced by start-up schools, including the lack of facilities funding (estimated to be over $1,000 per student). Historically, non-charter schools receive significant facilities funds and support.

## Introduction

The roots of this study began two years ago when one of the authors conducted case studies examining the factors influencing successful charter schools in California (Slovacek, 2001). Some hypothesized reasons in the earlier study for charter success included 1) having independent charter status, 2) being new start-up schools thereby allowing hiring of excellent teaching staffs, 3) staying relatively small, 4) promoting parental involvement, and 5) having strong school leadership with "fire in the belly" to make a difference, and 6) having their own boards of trustees to guide their missions and supplement the schools' finances. It was outside the scope of the current study to explore all of these possible factors. However, data that were readily available from the California Department of Education enabled the study of some of these factors as well as others supported by research.

The main purpose of this study was to compare student achievement between California charter schools and California non-charter schools while taking students' socioeconomic status ("SES") into consideration. This follows a suggestion from Grissmer, Flanagan, Kawata, and Williamson (2000) who emphasized the importance of conducting separate analysis for high- and low-SES students when measuring the effects of factors that influence students' achievement. They argue: "if most measurements contained typical student populations with large proportions of more-advantaged students, smaller effects might be expected, and effects would be "inconsistent" across studies if student characteristics changed." Thus, this study controls for the influence of SES on academic performance since SES has been shown to be a salient factor.

In addition, Friedman (2000) analyzed causal factors for California students taking the Stanford 9 tests. He concluded that SES, not ethnicity, was the main determinant of academic performance. Furthermore, he states, "these socioeconomic differentials translate into hugely disparate academic outcomes. The average API for socially disadvantaged students—those qualifying for subsidized lunches or whose parents didn't graduate from high school—was 499, a staggering 118 points below the statewide average." This report presents the results of the Academic Performance Index (API) scores for charter schools in the state of California serving low-SES students. The API is based on the Stanford Achievement Test (SAT 9). API scores and SAT 9 scores for 1999, 2000, and 2001 (testing years) were examined.

### The Purpose of the Study

The main purpose of the study was to see how charter schools serving low-SES students fared compared with the statewide averages on standardized test scores and in particular, the API. The research questions that guided the study are as follows:

1. How do California charter schools and California non-charter schools that serve low-SES students compare as measured by API?
2. How do California charter schools compare to all California schools in serving high proportions (50% or more) of low-SES students as measured by API?

3. How does the API growth rate or improvement of California charter schools compare with the performance of California non-charter schools serving high proportions (50% or more) of low-SES?
4. What characteristics of charter and non-charter schools seem to be related to student achievement as measured by SAT 9 and API scores?

## Method

The main method employed in the study was a longitudinal statistical analysis of test results data available for California schools. The unit of analysis consisted of individual schools in California.

***Data Collection***

Data was acquired from the California Department of Education through their web site. The databases downloaded and analyzed included the STAR databases, including the SAT 9 results for each school in the state as well as the API files for 1999, 2000, and 2001 testing years. The API files contained close to 100 variables including school name, CDS code, API scores, student ethnicity, enrollment size, subgroup performance, measures of socioeconomic status, and other related data. Data from California Network of Educational Charter (CANEC)'s database on charter schools was also merged with the state's databases. CANEC data included school size, type of charter (conversion or start-up), type of instruction (e.g. classroom based, distance education, home schooling, combinations, etc.) and other variables.

***Data Preparation***

Data was prepared by merging files and converting them to Excel and other file formats for data analysis. Other preparation required researching individual school characteristics on the Internet from the California Department of Education and adding it to the California Department of Education's SAT 9 test score and API data files.

***Data Analysis***

The "enriched" databases were converted and analyzed by SPSS – The Statistical Package for the Social Sciences -- software. Subgroup means were calculated and compared all non-charter schools in California with charter schools. Of particular interest were schools that served low-income students who were eligible to receive free or reduced cost lunches defined by the Federal guidelines for this program. High poverty schools were defined as those where at least half (50%) of the students served are eligible to receive free or reduced lunches. Correlational analysis and regression analysis were used to examine factors affecting SAT 9 and API performance.

Since previous research studies have shown the effects of SES, it was important to control for SES in the analysis and comparison of scores. Charter schools tend to under-report (or not report at all) the numbers of students who participate in the Federal Free or Reduced Lunch Program, since some do not have access to adequate facilities to offer lunch programs and the paperwork

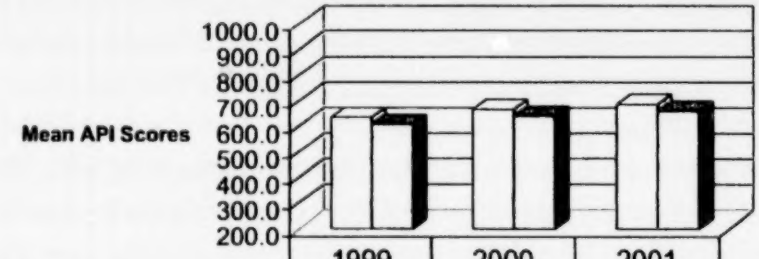
burden to do this is so onerous. Thus, the numbers in this study for the charter schools is somewhat smaller than the total number of charter schools serving low-SES students.

To control for SES, only those schools in California that reported serving free or reduced lunch students were examined. To further control for the effects of SES, the study examined "high poverty" schools – schools serving more than 50% free or reduced lunch students. Data files used in this report included the API and STAR files for the past three years that were downloaded from the California Department of Education's web site. Also, several files on charter school API's including data on various characteristics were used. The State Board of Education provided the files. Statistical analyses were conducted to gauge the effects various charter school characteristics have on their API scores.

## Results

Chart A below shows comparisons of the past three-year mean API scores between California charter schools and California non-charter schools. California schools show a gradual increase in API scores from 1999 to 2001. On average, the charter schools slightly under-performed the non-charter schools unadjusted for SES.

**Chart A**
**Mean API Scores: CA Charter vs. Non-Charter Schools**
**1999, 2000, 2001**




| | 1999 | 2000 | 2001 |
|---|---|---|---|
| CA Non-Charter Schools (N=6520) | 631.8 | 664.3 | 683.2 |
| CA Charter Schools (N=93) | 606.5 | 638.4 | 659.9 |

Although the mean API scores show that the students in the California charter schools are not performing as well as the students in the California non-charter schools, the API percent improvement shown in Chart B illustrates that the charter schools improved slightly more from 1999 to 2001 than the non-charter schools. The improvement in API scores for the charter



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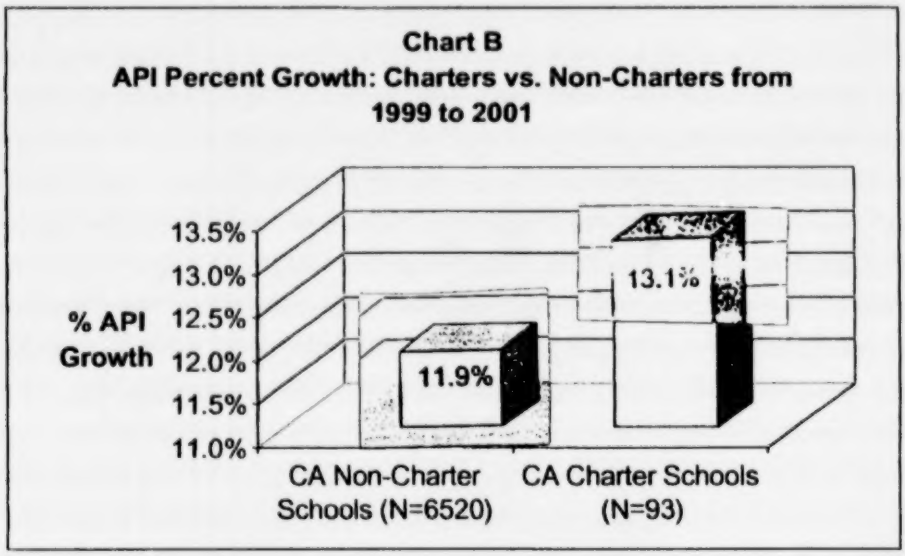
schools is 53.4 points while the improvement for non-charter schools is 51.4 points. The corresponding two-year growth rates are 13.1% and 11.9%.




Given the effect of SES on students' test performance, SES was controlled by examining only those schools serving a high proportion of low-SES students. In Chart C, students' growth from 1999 to 2001 API mean scores is compared based on different poverty levels, e.g., schools serving 50% and 75% or more of students participating in the Free or Reduced Lunch Program.

When charter schools and non-charter schools serving 50% or more of students participating in the Free or Reduced Lunch Program are compared, the percent growth for charter schools is **22.6%** (a 67 API point gain) and non-charter schools is **19.4%** (a 64.2 API point gain). The percent API growth was computed first by converting API scores to a ratio scale (a scale ranging from 0 to 100), and then by computing percent change from 1999 to 2001.

Interestingly, when comparing schools serving a greater (75% or more) proportion of students participating in the Free or Reduced Lunch Program, charter schools show a greater growth in API scores. Charter schools show **28.1%** (a 74.3 API point gain) growth while non-charter schools show **23.8%** (a 68.2 API point gain) growth from 1999 to 2001. Clearly, Chart C demonstrates that the three-year growth in API scores for charter schools serving predominantly low-SES student populations is noteworthy. In short, it appears that California charter schools are doing a better job of improving the academic performance (as measured by API) of California's most at-risk students, those who are low-income, than non-charter California public schools.

Table 1 below presents the average API scores for the past three years for both charter and non-charter public schools. Table 1 was used for calculating the growth rates in the charts and in Table 2. Note that schools not reporting free or reduced lunch numbers are excluded.

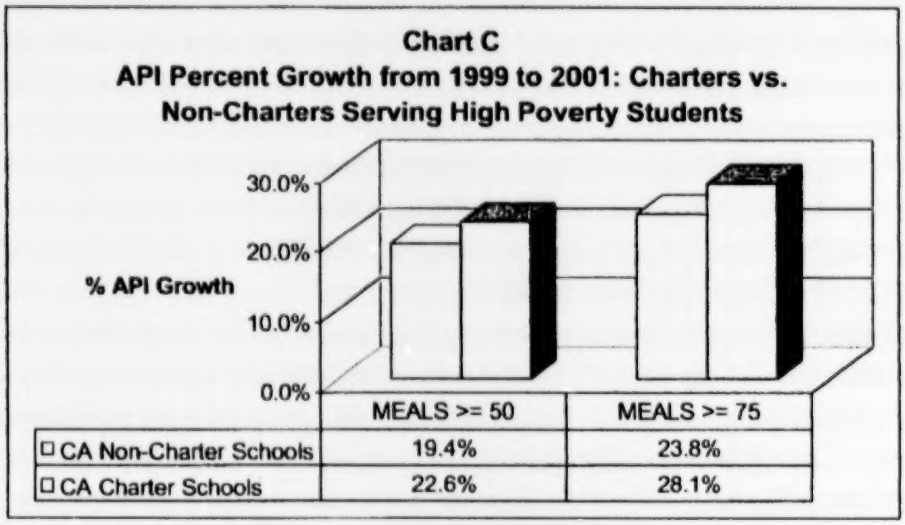



**Table 1. API Scores 1999-2001**

| | Year | CA Charter Schools | N | CA Non-Charter Schools | N |
|---|---|---|---|---|---|
| **No SES Controls** | 1999 | 606.5 | 93 | 631.8 | 6520* |
| | 2000 | 638.4 | 93 | 664.3 | 6520* |
| | 2001 | 659.9 | 92 | 683.2 | 6723* |
| **MEALS >= 50** | 1999 | 496.3 | 41 | 531.2 | 3089* |
| | 2000 | 537.2 | 41 | 569.9 | 3089* |
| | 2001 | 563.3 | 41 | 595.4 | 3136* |
| **MEALS >= 75** | 1999 | 464.2 | 25 | 486.4 | 1628* |
| | 2000 | 505.2 | 25 | 526.4 | 1628* |
| | 2001 | 538.5 | 25 | 554.6 | 1549* |

* Note that numbers of non-charter schools differ slightly by year due to the two separate data sets (1999-2000 and 2000-2001) available to analyze students' growth. Since year 2000 data resides in both files, we were able to estimate the error in using slightly different numbers for non-charter schools. The error for 2000 API scores is 2 API points or .3% which is insignificant.

One of this study's research questions was: How do California charter schools compare to California non-charter schools in serving high proportions (50% or more) of low-SES students as measured by API?" From the tables above one can calculate the proportions of low-SES students served by charter schools and by non-charter schools (for those schools reporting SES

data AND API data). In 2001, the percentage of charter schools reporting both three years of API scores and meals, who served students where 50% or more are low-SES is estimated at 44.1% vs. 46.6% for non-charters. The percentage of charter schools serving students where 75% or more are low-SES students is estimated at 27.2% vs. 23.04% for non-charters schools in California.

**Table 2. API Growth from 1999 to 2001**

| | CA Charter Schools | | | CA Non-Charter Schools | | |
|---|---|---|---|---|---|---|
| | API Points | API Growth | N | API Points | API Growth | N |
| No SES Controls | 53.4 | 13.1% | 93 | 51.4 | 11.9% | 6520* |
| MEALS >= 50 | 67.0 | 22.6% | 41 | 64.2 | 19.4% | 3089* |
| MEALS >= 75 | 74.2 | 28.1% | 25 | 68.2 | 23.8% | 1628* |

**Facilities Funding and Charter Schools**

Even though student achievement in charter schools appears to be slightly lower than that achieved in non-charter schools over the last three years (from Table 1), this result needs to be interpreted in the context of the different facility funding provided to charter and non-charter California schools. Studies show that facility conditions tend to affect student performance (Frazier, 1993). It should be noted that test scores in this study for charter schools were achieved without the benefit of specific public funding for their facilities. This means that in most cases (especially start-ups) charter schools had to spend their operating budgets to cover their facilities costs. This results in reduced funding levels for teacher salaries, books, and other instructional resources.

A United States General Accounting Office Report (Sept. 2000) states that most charter schools do not have access to the most common sources of facility funding that most non-public schools receive. Their report does identify other states such as Minnesota that provide up to $1,500 per pupil per year and Florida which provides $825, $946, and $1,252 per pupil for elementary, middle, and high school facilities costs.

According to the California Department of Education, the average California charter school funding level is approximately $5,000 per pupil. The estimated charter school block grant rates are $4,567 for K-3, $4,636 for grades 4-6, $4,670 for grades 7-8, and $5,447 for grades 9-12 (Charter School Block Grant, 2002). Assuming that charter schools apply and receive most of the non-block grant program funding to which they are entitled (and excluding grants that require additional work such as after school and summer school programs), this figure will be increased by $349 as follows: lottery - $128 per ADA; K-4 classroom and school library materials (K-12) - $28 per ADA; "In-Lieu" economic impact aid - $93 per qualifying student or minimum formula for small schools; and English language acquisition program - $100 per qualifying English learner student in grades 4-8 (Premack, 2001). Even if all charter schools were to receive Title I funding, this still would bring charter school funding up to no more than an estimated $6,000 per

pupil. This is far less than the State average of $7,174 per pupil (according to California Legislative Analyst 2001). The approximately $1,000 difference is mainly attributable to the cost of facilities funding - funding California charter schools have been ineligible to receive up until now.

In short, the authors estimate charter schools' state and federally funded budgets, on average, are 15-20% lower than California's non-charter public schools. Therefore, student achievement in charter schools during the period studied shows a greater rate of improvement, despite lower budgets owing to the lack of facility financing.

## Factors Affecting the 2001 API for All California Schools

Multiple regression analyses were performed to examine factors affecting API performance for all California schools. The factors tested included the percentages of English language learners, students participating in the Free or Reduced Price Lunch Program, teachers with full credentials or emergency credentials, mobility, and enrollment size. The Model Summary table below shows that there is a fairly strong predictive model in explaining the API 2001 scores. The multiple correlation coefficient (R) was .847 and the percentage of variance explained in API scores was 72%, which means the variables mentioned above are strong predictors of student achievement.

**Table 3. Regression Analysis Results for All California Schools**

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .847[a] | .718 | .718 | 65.55 |

a. Predictors: (Constant), ENROLL, MEALS, MOBILITY, EMER, EL, FULL

**ANOVA[b]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 73011267 | 6 | 12168544.47 | 2832.036 | .000[a] |
| | Residual | 28702273 | 6680 | 4296.747 | | |
| | Total | 1.02E+08 | 6686 | | | |

a. Predictors: (Constant), ENROLL, MEALS, MOBILITY, EMER, EL, FULL

b. Dependent Variable: API 2001

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 782.309 | 13.288 | | 58.872 | .000 |
| | MEALS | -2.645 | .042 | -.651 | -62.986 | .000 |
| | EL | -.563 | .059 | -.097 | -9.609 | .000 |
| | MOBILITY | -.868 | .071 | -.083 | -12.264 | .000 |
| | FULL | 1.062 | .130 | .110 | 8.164 | .000 |
| | EMER | -.432 | .161 | -.036 | -2.689 | .007 |
| | ENROLL | -5.76E-02 | .002 | -.225 | -32.887 | .000 |

a. Dependent Variable: API 2001

Concerning the variables in the table above, "MEALS" refers to the effect of having participants in the Free or Reduced Price Lunch Program; "EL" refers to the percentage of English language learners in the school; "MOBILITY" is a percentage referring to student turnover in the school; "FULL" refers to the percentage of teachers with full credentials; "EMER" refers to the percentage of teachers with emergency credentials; "ENROLL" refers to the number of students enrolled on the first day of SAT 9 testing.

In the regression analysis table directly above, the unstandardized B coefficient (in second column) shows how different factors add or subtract points from a school's API score. For example, in the table above the unstandardized beta coefficient (B) for each variable predicts how many points change would occur in predicted API scores for a one point or unit change in the independent variable. The model predicting 2001 API scores for all California schools then is as follows:

**API = 782 - 2.645 (MEALS) - .563 (EL) - .868 (MOBILITY) + 1.062 (FULL) - .432 (EMER) - .05762 (ENROLL) + e**

The equation above is the predictive equation for the API score for a given school. In other words, one would plug in the values of a school's MEALS, EL, MOBILITY, FULL, EMER, and ENROLL to predict the school's API in 2001. The correlation between the predicted API and the actual API score is quite high, R = .85. In Table 3 and the equation above, one can see that each percentage increase in students who participate in the Free or Reduced Price Lunch Program results in a reduction of 2.65 API points in the school's mean score. Likewise, the school's mean API score was decreased by .56 for each percentage point increase of English language learners in the school. Each percentage point increase in mobility in the school resulted in an even greater decrease of API scores by .87. API scores were also affected by whether teachers had full credentials or not. Each percentage point increase in the teaching staff with full credentials resulted in an increase of 1.06 API points for the school while each percentage point increase in the teaching staff with emergency credentials decreased .43 API points. Furthermore, each additional student enrolled in the school resulted in a decrease of 0.058 API points.

## Factors Affecting Test Results of Charter Schools

### SAT 9 Scores

Prior to conducting the API study, the investigators examined charter school characteristics and their SAT 9 scores. The disadvantage of working with SAT 9 is that for a single school there exists as many as 43 different SAT 9 scores. For example, scores are reported by subjects within grade levels ($2^{nd}$ reading, $3^{rd}$ reading, ..., $2^{nd}$ math, $3^{rd}$ math, ..., $9^{th}$ science, $10^{th}$ science, etc.).

As a rough indicator of relationships, the correlations between the SAT 9 scores for the 43 different grades by subjects and the independent variables in the CANEC database (start-up vs. conversion, type of instruction, length of time opened, and enrollment size) were calculated. Two variables seem to be consistently correlated with SAT 9 performance. First, whether a school is a startup or a conversion seems to make a strong difference. **88%** of the grade level subject SAT 9 score correlations were POSITIVE indicating that start-up charter schools seem to outperform conversion charter schools. **86%** of the correlations between SAT 9 (grade/subjects) scores and size of enrollment were NEGATIVE indicating that again, smaller size charter schools seem to outperform larger size charter schools. There may be a bit of overlap here since start-up charter schools tend to be smaller.

### API 2001 Scores

By modifying the API files on charter schools from the State Board of Education to include several variables of interest for charters, a second regression analysis was performed to examine factors affecting API performance. The factors tested included start-up vs. conversion, type of instruction, length of time opened, and enrollment size. Also examined for charter schools were other variables of interest that are expected to influence API scores (based on our analysis of all California schools), such as percentage of English language learners, mobility, credential status, and SES. Table 4 presents the results of a regression analysis examining the effects of the above independent variables in predicting API 2001 scores. The Model Summary table below shows that there is a fairly strong predictive model in explaining the API 2001 scores for charters based on some of the factors mentioned above. Factors that did not turn out to be statistically significant were start-up vs. conversion, type of instruction, length of time opened, and percentage of faculty with emergency credential. The multiple correlation coefficient (R) was .81 and the percentage of variance explained in API scores was 64%.

The equation below is the predictive equation for the API score for a given school. In other words, one would plug in the values of a school's MEALS, EL, MOBILITY, FULL, and ENROLL to predict the school's API in 2001. The correlation between the predicted API and the actual API score is quite high, R = .81.

**API = 734.059 - 1.231 (MEALS) - 2.825 (EL) - 2.423 (MOBILITY) + 1.415 (FULL) - .0454 (ENROLL) + e**

This model is very similar to the model predicting API scores for all California schools.

**Table 4. Regression Analysis Results for Charter Schools**

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .807[a] | .652 | .637 | 82.54 |

a. Predictors: (Constant), ENROLL, FULL, MOBILITY, MEALS, EL

**ANOVA[b]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 1453837 | 5 | 290767.470 | 42.675 | .000[a] |
| | Residual | 776741.6 | 114 | 6813.523 | | |
| | Total | 2230579 | 119 | | | |

a. Predictors: (Constant), ENROLL, FULL, MOBILITY, MEALS, EL

b. Dependent Variable: API 2001

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 734.059 | 34.627 | | 21.199 | .000 |
| | MEALS | -1.231 | .274 | -.312 | -4.497 | .000 |
| | EL | -2.825 | .440 | -.448 | -6.425 | .000 |
| | MOBILITY | -2.423 | .366 | -.382 | -6.615 | .000 |
| | FULL | 1.415 | .339 | .238 | 4.174 | .000 |
| | ENROLL | -4.54E-02 | .017 | -.153 | -2.717 | .008 |

a. Dependent Variable: API 2001

As expected, SES made a difference. Each percentage point of students who participate in the Free or Reduced Price Lunch Program resulted in **1.2** point drop in the charter schools' API scores. This 1.2 point drop (compared to 2.6 point drop for all California schools) supports the above finding in this study that charter schools are doing a better job of serving low-SES students.

Charter schools' API scores were also affected by having a high proportion of English language learners in the school. API scores decreased by **2.83** points for each percentage point increase of English language learners in the school.

Mobility was another important factor in that for every percentage increase in the California Department of Education mobility variable a charter school lost **2.4** API points on average.



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It is clear from the regression analysis above that smaller charter schools (those with lower enrollment size) do somewhat better than larger charter schools. In other words, size matters. Charter schools lost approximately **4.5** API points for every 100 students in charter school enrollment size.

The Ericson et al (2001) study provides concurring research support for charters being smaller by stating that 82% of charters are newly created and typically much smaller (200 students per school) than the traditional non-charter schools. According to a report by RPP International (2000), *The state of Charter Schools 2000*, "...during the 1998-99 school year, the median number of students in charter schools was 137, compared to a median of 475 in all public schools." The research provides evidence for a climate conducive to the success of charter schools *vis a vis* their typically smaller size.

## Conclusions

In this study, student performance was compared between charter and non-charter California public schools based on 1999, 2000, and 2001 API scores. This study focused on charter schools serving at least some free or reduced lunch eligible students (low-SES students). In general, the results showed that charter schools are doing a more effective job of improving academic achievement of California's most difficult to serve students, those students from low-income families. This is reflected in greater improvement rates for charter schools compared with non-charter schools. This trend was more pronounced when schools serve greater percentages of low-SES students.

To make adequate comparisons of student achievement between charter schools and non-charter schools, further research on the academic performance of charters, as measured by standardized tests, should be conducted controlling for SES. Since SES is indeed related to performance, then it must be factored into any comparative analysis of test scores.

This study also found several other factors in addition to SES affecting student academic performance as measured by standardized tests including enrollment size, mobility, proportion of English language learners, and teacher credential status. Variables that did not seem to make a difference for charter schools were start-up vs. conversion, type of instruction, and length of time opened. Efforts should be made to identify other variables that might have an impact on student achievement. Identifying these factors and understanding the relationship between these factors and student performance will enable educators to help students improve their performance and succeed academically. Furthermore, comparisons between charter schools and non-charters can be made on an even playing field if all of the determinants of achievement are factored into comparisons. In other words, fair comparisons of California schools' API's should be made acknowledging and controlling for the various factors that clearly influence academic performance on standardized tests.

Finally, given the small number of charter schools for which three years of data existed, it would be useful to continue to monitor the performance of SES disadvantaged students on the SAT 9 and API scores in California schools.

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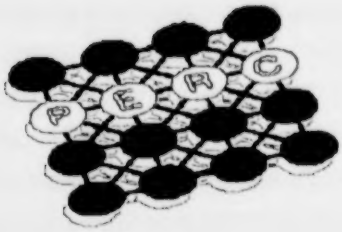


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